techniques of an active type using a measuring distance light projected from a camera. However, since these AF techniques have drawbacks based on their respective principles, in order to overcome these drawbacks, AF techniques of a hybrid type (to be referred to as "hybrid AF" hereinafter) are proposed.

A1 concl'd

Replace the paragraph starting at page 1, line 26 with:

In recent years, an AF in which two measuring distance schemes of a passive type and an active type are switched depending on states has been proposed.

Replace the paragraph starting at page 3, line 13 with:

A2

The present invention has been made in consideration of the drawbacks and the problems introduced above, and has as its object to provide a measuring distance device which can perform an accurate high-speed process for a hybrid AF camera.

Replace the paragraph starting at page 9, line 17 with:

A3

First, the basic configuration of a camera including this measuring distance device and related to the present invention is shown in FIG. 1. Thereafter, the detailed parts of the camera will be described with reference to FIGS. 2A to 8.

[Replace the paragraph starting at page 9, line 22 with:]

As shown in FIG. 1, in this camera, sensor arrays 3a and 3b in which pixels for light-receiving elements are arranged are arranged in parallel to face an object 21 to be focused. In order to form the image of the object 21 here, one pair of light-receiving lenses 2a and 2b are arranged in front of the pair of sensor arrays 3a and 3b such that the light-receiving lenses 2a and 2b are separated from each other by a focal distance f to give a predetermined parallax B between the light-receiving lenses 2a and 2b, and an object distance L is calculated by a known "principle of triangular measuring distance".

A3 Cont'd

[Replace the paragraph starting at page 10, line 7 with:]

The images of the object 21 formed on the two sensor arrays 3a and 3b change by decreasing or increasing the object distance L, thereby changing the relative positions of optical axis references of the light-receiving lenses 2a and 2b. In order to detect the changes of the positions, an analog-to-digital (A/D) converter 16 converts integration outputs (In this case, integration circuits related to the outputs are expressed to be included in the pixels of the light-receiving elements of the sensor arrays 3a and 3b.) from the sensor arrays 3a and 3b into digital signals. An arithmetic controller (CPU) 1 constituted by a one-chip microcomputer compares the digital image signals of the sensor arrays 3a and 3b with each other to detect the difference between the relative positions and to calculate a distance. At this time, since a long period of time is required to digitize outputs from all the sensors,

A3 cont'd

the camera according to the present invention further has a selection unit 17a as selection means for selecting the areas of the sensor arrays 3a and 3b. The selection unit 17a is devised such that a switching operation of a selection switch 17b constituting the selection unit 17a can select a specific area to be used.

Replace the paragraph starting at page 13, line 4 with:

A4

A circuit configuration having a stationary light removing function is illustrated in FIG. 2A. A light-receiving element $3a_1$ illustrated in FIG. 2A is, e.g., an element corresponding to one of pixels constituting the sensor array 3a for detecting an image signal. A circuit design is made such that an optical current I_p output from the light-receiving element $3a_1$ depending on a quantity of light being incident on the element flows into GND through a transistor 7a of a stationary light removing unit 7. The circuit of a current detection unit 7c controls a gate voltage of the transistor 7a such that no current flows in an integration circuit constituted by an integration amplifier 16a, an integration capacitor 16b, and reset switch 16c.

Replace the paragraph starting at page 13, line 19 with:

A holding capacitor 7b is arranged to fix the potential of the gate voltage. In this fixing state, for example, when the infrared light-emitting diode (IRED) 4a is turned on to project pulse-like measuring distance light as a pulse on the object 21 through a projection lens 4,

and when the circuit of the current detection unit 7c is inactivated, the following operation is performed. More specifically, the changes of the voltages at both the ends of the capacitor 7b cannot respond to a sharp change of the pulse-like projection of light. When the reset switch 16c is set in an ON state, only an optical current depending on the pulse light is input to the integration circuit, and a photoelectrically converted voltage based on the measuring distance pulse light is output to the output terminal of the integration amplifier 16a. Therefore, when this output is digitized, reflected light quantity data depending on a reflected signal light can be detected.

Replace the paragraph starting at page 14, line 11 with:

Cont'd A4

As the stationary optical current I_p increases in a bright photographing scene, error components erroneously input to the integration circuit increases in number. The measuring distance device is easily affected by an offset error of the circuit. In addition, in the bright picture scene described above, it is difficult for the measuring distance device to accurately detect the reflected light quantity without changing the configuration of the measuring distance device. For this reason, with the measuring distance device, in order to remove the random nose component, when the brightness of the object 21 is at a level higher than a predetermined level, a measuring distance operation is repeated many times to average the measuring distance results.

Replace the paragraph starting at page 15, line 9 with:

In general, in an image signal containing a noise component, an error is easily generated when the patterns of the left and right sensor arrays are compared with each other, and the probability of performing an erroneously measuring distance operation is high. Therefore, the number of times of integration is preferably decreased to suppress switching noise. In contrast to this, in order to reduce random noise such as thermal noise generated when a brightness is high, the number of times of integration is preferably increased to average the measuring distance results.

A5

Replace the paragraph starting at page 19, line 27 with:

The active AF (abbreviated as "electronic-flash active") using an electronic flash requires an enormous amount of energy and emits dazzling light. For this reason, it is convenient that the effect of the electronic flash is obtained at a position which is more than a maximum IRED effective distance away from the object. In this electronic-flash active, since only an area in a range in which the electronic flash light reaches may be detected, as shown in FIG. 6B, an effective area in the sensor array is further limited (for example, area C). Similarly, when the electronic flash is active, detection areas are changed. For this reason, a sensor area in which a digitized value is input by a decision made by the control unit 1a is limited in the sensor array, integration control can be more accurately performed, and a time required for analog-to-digital conversion can also be shortened advantageously.

A6

Replace the paragraph starting at page 20, line 17 with:

When the sensor areas of the three areas of the sensor array which are limitatively used are illustrated as monitor areas in the finder screen 20, an area arrangement in which the areas can be selectively switched in the finder screen illustrated in FIG. 7 is obtained. For example, the area A in which the most wide range can be detected, the area B which corresponds to the center of the area A and which is approximately 1/3 the area of area A, and the area C which corresponds to the center of the area C and which is approximately 1/3 the area of area B are designed such that these areas can be appropriately switched according to the above cases.

Replace the paragraph starting at page 23, line 20 with:

In this manner, by the projection light source which is alternatively determined, a measuring distance operation in an active mode using light of the IRED or light of the electronic flash is performed as a "regular measuring distance operation (original measuring distance operation)" in subsequent steps S8 or S11, respectively. In this measuring distance operation, light-projection integration is repeated until a predetermined voltage is obtained by emission of light for a predetermined time. When the obtained integration voltage V_{INT} is higher than the predetermined voltage, it can be determined that light from the IRED reaches the object. However, when the integration voltage V_{INT} is lower than the predetermined voltage, it

can be determined that the light quantity of the IRED is not enough to perform a measuring distance operation, and the measuring distance device is controlled such that projection of electronic flash light which is stronger than the light of the IRED is performed.

Replace the paragraph starting at page 24, line 13 with:

A7 cont'd

When the projection light source used here is the IRED, in step S8 an AF operation using the IRED is executed (S8). More specifically, the brightness of an object is measured, and integration times are switched depending on the brightness. For example, when the brightness is high, a light-emission time is set to be short, otherwise, the light-emission time is set to be long to control the emission of light. Thereafter, the area B narrower than the area A is selected (S8a), an integration process is performed to the sensor in the area B. Pulse light of a predetermined time is projected n times, and the integration voltage V_{INT} is calculated by the analog-to-digital converter. The completion of the integration is controlled in the decision loop in steps S9 and S10. In the step S10, an integration count limiter n1 is set, the time of the completion is controlled by the count n1.

Replace the paragraph starting at page 25, line 3 with:

As the result in the decision step S7, when the projection light source is an electronic flash device, in step S11 an AF operation using electronic flash light is executed (S11). Thereafter, a predetermined area C is

selected (S11a), and an integration process is performed to the sensor in the area C. The completion of the integration is controlled in the decision loop in steps S12 and S13. More specifically, when light-projection integration is performed times the number of which is larger than a predetermined number, energy is wasted, and a time lag is adversely affected. For this reason, the integration process is completed within a predetermined time (S12). In this case, an integration count limiter n2 is set, and the time of the completion is controlled by the count n2 (S13).

A7 cont'd

Replace the paragraph starting at page 25, line 19 with:

After the regular (original) measuring distance operation, on the basis of the result of a light quantity decision (S20) performed by a result P obtained by integrating a reflected light quantity (i.e., a value obtained by dividing the integration voltage V_{INT} by an integration count) and the result of a pattern decision (S21), it is decided whether a triangular measuring distance operation can be performed or not (S22). At this time, as shown in FIG. 5, light-emission times and light-emission counts are switched by the brightness of the object. If a reflected light image signal by which the triangular measuring distance operation can be performed is obtained, in step S24 the triangular measuring distance operation is performed. On the other hand, when the pattern is not sufficient, or when it is decided in step S25 that the reliability of the triangular measuring distance operation is low, an AF operation (called a "light

A7 cont'd

quantity AF operation") based on the result P related to the quantity of reflected light is performed in step S23.

Replace the paragraph starting at page 26, line 22 with:

A8

Since an effective distance used when the IRED is used as a light source used in this case is different from an effective distance used when the electronic flash is used as the light source as illustrated in FIG. 6B, a decision in consideration of the difference is made to decrease the number of failures in the light quantity AF operation in the step S23. For example, in fact, a situation in which measuring distance light regularly reflected by an object such as a mark or a reflector of a tail lamp of an automobile, glass, or the like is directly incident on the sensor may occur.

Replace the paragraph starting at page 27, line 7 with:

Therefore, in step S30 when light is decided as light from an electronic flash, and when a result that a thing exists within, e.g., a distance of 5 m from the measuring distance device is obtained (S31), it is decided that the reliability of the measuring distance operation is low, and control is performed such that a distance limiter of "5 m" is operated (S32).

In accordance with 37 C.F.R. § 1.121(b)(2)(iii) separate sheets with the replacement paragraphs, marked up to show all changes relative to the previous version of the paragraphs, is filed herewith.